## WE CLAIM:

- 1. A method of conducting a transaction by a purchaser over a communications network, comprising:
- (a) assigning to said purchaser a first payment account number having a status which changes over time;
- (b) providing a second payment account number associated with said first payment account number, said second payment account number not being a transaction number and having an encryption key assigned thereto;
- (c) requesting authorization for payment of said transaction with said second payment account number and not said first payment account number;
- (d) identifying said purchaser's first payment account number in response to said authorization request; and
- (e) responding to said authorization request based upon said status of said first payment account number at the time of the transaction.
- 2. The method of claim 1, wherein said authorization request includes a cryptographic code based on said encryption key, and wherein said response to said authorization request is further based on said cryptographic code.
- 3. The method of claim 2, wherein said status is a function of the credit balance available for use by said purchaser, which credit balance changes over time as a result of the purchases made by the purchaser.

- 4. A method of conducting a transaction by a purchaser over a communications network, comprising:
- (a) assigning to said purchaser a first payment account number having a status which changes over time;
- (b) providing said purchaser with a secure payment application which includes a cryptographic key that is unique to said account number and a pseudo account number having the same length as and associated with said first payment account number;
  - (c) providing said purchaser with merchant data based on the transaction;
- (d) generating a message authentication code as a function of at least said merchant data and said cryptographic key;
- (e) providing said merchant said pseudo account number and said message authentication code and not said first payment account number;
  - (f) verifying that said merchant data is the correct data for the transaction;
- (g) requesting an authorization for payment of said transaction, said authorization request not including said first payment account number but including said pseudo account number;
- (h) recognizing said pseudo account number and cryptographically processing said pseudo account number to produce said first payment account number; and
- (i) responding to said authorization request based on the status of said first payment account number, and passing said response back without transmission of said first payment account number.

- 5. The method of claim 4 wherein said pseudo account number is indicated to be different from said first payment account number by a special identifier within the pseudo account number.
- 6. The method of claim 4 wherein said pseudo account number is indicated to be such by data within a transaction record.
  - 7. The method of claim 4 wherein said cryptographic key is a secret key.
- 8. The method of claim 4 wherein said cryptographic key is a private key and said secure payment application further includes a card-unique certificate for the corresponding public key and said message authentication code comprises a digital signature generated by said secure payment application.
- 9. The method of claim 4 wherein said pseudo account number is obtained by encrypting the associated first payment account number utilizing DESX methodology.
- 10. The method of claim 4 wherein said pseudo account number is converted back into its associated first payment account number utilizing DEA with a double-length key.